

Elie de Beaumont in the course of his long career filled many offices of distinction. As far back as 1827 we find him lecturing for his master at the Ecole des Mines, and afterwards succeeding to the chair. In 1832, on the death of Cuvier, he was chosen to fill the only chair of Natural History at the Collège de France. He thus stood at the head of the geological tuition of the country. The mining engineers and others who required geological instruction for State certificates or appointments passed through his hands. His fame likewise attracted many from a distance, so that as a teacher his influence must be regarded as having been very great. Moreover, he became Inspector-General of Mines, member and perpetual secretary of the Academy of Sciences, and was an associate of many of the learned societies of Europe and America. His scientific renown and high personal character led to his being chosen as senator and raised to the rank of Grand-Officier of the Legion of Honour. Full of honours, therefore, he has closed a long life with his faculties unimpaired to the last, and in the midst of the activity which had marked his long and honourable career.

This is perhaps hardly the place or the time to pass any judgment on the work of the illustrious man who has just gone from among us. His name will ever be associated with the history of geology, linked with those of Cuvier, Brongniart, Dufrenoy, and others who led the way to all that has since been achieved in the geology of France.

ARCH. GEIKIE

FLÜCKIGER AND HANBURY'S "PHARMACOGRAPHIA"

Pharmacographia: a History of the principal Drugs of Vegetable Origin met with in Great Britain and British India. By Friedrich A. Flückiger, Ph.D., Professor in the University of Strassburg; and Daniel Hanbury, F.R.S., Fellow of the Linnean and Chemical Societies of London. (Macmillan and Co., 1874.)

THERE was a stir of anticipation and inquiry amongst pharmacologists when it first became known that Prof. Flückiger and Mr. Hanbury were engaged upon a work of joint authorship. Speculation was busy as to what was to be the nature of the book, to what particular objects it would be directed, what extent of ground it would cover, and so forth. Upon a single point all were agreed, namely, that it would *not* be one of those composite treatises on drugs—organic and inorganic—therapeutics, pharmacy, and toxicology, enlivened by traditional botany and old-fashioned chemistry, which have passed current amongst us as "Manuals of Materia Medica."

One generation after another of compilers have produced volumes supposed to be suited to the wants of the time, in which the same sort of information has been given, the same errors perpetuated often in almost identical words, until the very term "Materia Medica" has come to be looked upon with suspicion by scientific men. Perhaps the origin of the shortcomings of the general run of such works may be traced to the fact that they have often been written by practising physicians who were lecturers in medical schools, and have been designed primarily as handbooks for medical students. Nor need

it be a matter of wonder that, with no special facilities for acquiring original information as to the history of drugs, and with few opportunities for verifying the statements of others, authors so situated were content to transcribe without examination what had been already recorded as fact, and to devote their better energies to the more purely medical relations of the subject—the aspect of chief interest both to themselves and those for whom they wrote.

The question has often been raised, and once at least on very high authority, why the overcharged curriculum of medical study should still be encumbered with *Materia Medica*; why, in view of the separation which is gradually taking place between the practice of Medicine and that of Pharmacy and of the scientific education now received by the pharmacist, such matters as the physical characters sources, and chemistry of drugs should not be referred to those whom they primarily affect.

This, perhaps, is scarcely the place to discuss such questions in detail, but they inevitably present themselves on a comparison of the present book with any of those to which allusion has just been made.

It is generally no very difficult thing to give an intelligible account of a work embodying the results of scientific research. It is not requisite that the knowledge of the reviewer should be co-extensive with that of the author to enable him to form a just estimate of its strong and weak points, or even to exercise the critical faculty where opinions rather than facts are advanced. But the task of introducing suitably a closely printed volume of 700 pages, containing scarcely anything but facts—an unusual proportion of which are stated for the first time, and those which are old assuming a new importance from their fresh verification, the whole given with a condensation of style that refuses page-room to a superfluous word—is not one that can be performed by the ordinary method of summarising results.

The scope of the "Pharmacographia" and the intention of its authors can hardly be better told than by a few extracts from the Preface. After defining the word Pharmacographia as "a writing about drugs," the authors state that "it was their desire not only to write upon the general subject and to utilise the thoughts of others, but that the book which they had decided to produce together should contain observations that no one else has written down. It is in fact a record of personal researches on the principal drugs derived from the vegetable kingdom, together with such results of an important character as have been obtained by the numerous workers on *Materia Medica* in Europe and America."

Restricting the field of their inquiry by the exclusion of Pharmacy and Therapeutics, "the authors have been enabled to discuss with fuller detail many points of interest which are embraced in the special studies of the pharmacist."

"The drugs included in the work are chiefly those which are commonly kept in store by pharmacists, or are known in the drug and spice market of London. The work likewise contains a comparatively small number which belong to the Pharmacopoeia of India: the appearance of this volume seemed to present a favourable opportunity for giving some more copious notice of the latter than has hitherto been attempted."

Now as to the manner of treatment. A uniform sub-

division into sections has been adopted throughout the work. In the first place, "Each drug is headed by the Latin name, followed by such few synonyms as may suffice for perfect identification, together in most cases with the English, French, and German designation.

"In the next section, the *Botanical Origin* of the substance is discussed, and the area of its growth or locality of its production is stated."

"Under the head of *History*, the authors have endeavoured to trace the introduction of each substance into medicine, and to bring forward other points in connection therewith, which have not hitherto been much noticed in any previous work."

"In some instances the *Formation, Secretion, or Method of Collection* of a drug has been next detailed: in others, the section *History* has been immediately followed by the *Description*, succeeded by one in which the more salient features of *Microscopic Structure* have been set forth."

The next division includes the important subject of *Chemical Composition*; then follows a section devoted to *Production and Commerce*; and lastly, observations, chiefly dictated by actual experience, on *Adulteration* and on the *Substitutes* which in the case of certain drugs are occasionally found in commerce, though scarcely to be regarded in the light of adulterants.

"The medicinal uses of each particular drug are only slightly mentioned, it being felt that the science of therapeutics lies within the province of the physician, and may be wisely relinquished to his care."

The reader must not judge the Preface by the disconnected sentences which have been quoted to serve a particular purpose. Only sufficient has been copied to explain briefly, and as far as possible in the authors' own terms, the general scheme of their work.

The plan, as will be seen, is one of great comprehensiveness, and the execution throughout is of characteristic thoroughness. A single article taken at random from the book would be better evidence than any criticism, of the exhaustive character of the treatment; but unfortunately, considerations of space preclude anything more than a few general remarks suggested by a first perusal.

The investigation of the botanical origin of drugs is one which Mr. Hanbury has made his own, and few writers have set at rest so many debated questions in this division of the subject. Completeness and accuracy of the information now collected is exactly what might have been expected. The student who knows only the British Pharmacopœia will find much to learn, and something to unlearn, concerning the origin of many common medicinal substances. In some cases the corrections necessary arise merely out of questions of priority in botanical nomenclature, but in others the errors are founded in the wrong identification of the plants. For instance, *Fateorhiza palmata*, Miers, is the name accepted, for reasons given in the text, for the plant yielding calumba root, rather than the alternative specific terms of the Pharmacopœias. Oil of cajuput is assigned to *Melaleuca leucadendron*, L., whilst in the British Pharmacopœia and the Paris Codex it is referred to *M. minor*, DC., and in that of the United States to *M. cajuputi*, Roxb. Sumbul Root, the botanical history of which in our Pharmacopœia is stated to be unknown, appears as the product of *Euryangium Sumbul*, Kauffman, a plant of the natural

order Umbelliferae. On the other hand, in speaking of the botanical origin of Myrrh, which the Pharmacopœia, without show of doubt, assigns to *Balsamodendron myrrha*, Ehrenb., it is stated that "the botany of the myrrh trees is still encompassed with uncertainty, which will not be removed until the very localities in which the drug is collected shall have been well explored by a competent observer." It would be easy to multiply examples, but beyond a passing allusion to Pereira Brava as the root of *Chondodendron tomentosum*, Ruiz et Pav., a fact determined by Mr. Hanbury's researches, this portion of the subject need not be dwelt upon.

The information given under the head of "History" has a general as well as a technical value. All sorts of writers, ancient and modern, have been laid under tribute; and the glimpses one obtains, not only of the medical but of the domestic employment of drugs in past times, are full of interest.

This running commentary need not be extended to all the headings under which the treatment of each substance is arranged. The term "Substitute" as distinct from "Adulteration," perhaps needs a word of explanation. It is employed to comprise substances occasionally met with in commerce, the product of plants more or less closely allied to the official one; for instance, the wood of *Quassia amara* instead of that of *Picræna excelsa*, the occurrence of the root of *Aristolochia reticulata* in place of *A. serpentaria*, or of the dried plant of *Piper aduncum* in lieu of the true Matico.

The notices of Indian official drugs have the interest of novelty to European students, but beyond this leave little room for present remark. In course of time some of them may be introduced at home, and in any case, with the amount of communication which exists between England and her Eastern possessions, nothing which concerns the one can be unimportant to the other. Indian medical men are largely drawn from this country, and by them, at least, they will be gratefully received.

The only department of the book which does not yield unalloyed satisfaction is that which refers to "Microscopical Structure." The descriptive paragraphs are, no doubt, as good as words can make them, but mere words are insufficient for the purpose. If anyone doubts this, let him try to construct a drawing of microscopic structure from a description, and then compare it with the reality; or, on the other hand, let him endeavour to identify one vegetable production out of a number closely allied, by means of a mere verbal definition of characters. Either task is difficult at best, sometimes impossible. It is not to our credit that there should be no British work of reference containing a complete series of illustrations of the anatomy of drugs. What is wanted is not so much an elaborate atlas, like that of Dr. Berg, with large, ideal, diagrammatic drawings, suggested by the microscopic appearance of the various vegetable products used in medicine, as a set of figures of characteristic portions of structure presented in a form in which the working student may recognise them. How welcome such an addition to the book would have been from Prof. Flückiger's skilful hand. It is only just to the authors to state that they make no claim for completeness in this division of the work; indeed, they are so fully aware of what is needed, that one might almost indulge in the

hope of seeing a second edition with a supplementary volume of plates.

In a brief and imperfect notice like the present but scanty justice can be done to a book like the "Pharmacographia," a work which, from the amount of its original matter, the laborious verification of its facts, the accuracy of its references, and the extent of general erudition it reveals, will be received with no grudging welcome, and will be recognised at once and without misgiving as the standard of authority on the subjects of which it treats.

HENRY B. BRADY

SULLY'S "SENSATION AND INTUITION"

Sensation and Intuition: Studies in Psychology and Aesthetics. By James Sully, M.A. (Henry S. King and Co.)

A YOUNG aspirant to the woollack had as part of his first examination the question, "To whom was the Declaration of Rights presented?" To refresh his memory he cast his eyes on the paper of the gentleman on his left, who had written William I.; willing to give himself every advantage, he next stole a glance at the paper of the gentleman on his right, where he saw William III. "Ah!" thought he, with a knowing twinkle of the eye, "I'll strike the happy medium"—and down went William II. Mr. Sully, in the first of this collection of interesting essays, has struck the happy medium between the evolution and the individual experience psychologies.

Mr. Sully has read and pondered all the learning of his subject; but the thoroughgoing evolutionist is not unlikely to accuse him of having done more than "shaded for a moment the intellectual eye from the dazzling light of the new idea." If, as we are told, "it is far from improbable that a fuller investigation of the processes by which our conceptions of *space* are built up, will render superfluous the supposition of their innateness," it is not at all probable that *any* other conceptions are inherited. And the evolutionist will not, we fear, be able to draw much comfort from the assurance that "the psychologist, when satisfied of the presence of distinct mental phenomena not traceable to the action of his own laws, will gratefully avail himself of the additional hypothesis supplied to him by the philosopher of evolution;" for it not unfrequently is very difficult indeed to satisfy the psychologist of the presence of anything not traceable to the operation of his own laws. An authority in psychology writing in "Chambers's Encyclopædia," says that the assertions with regard to the instinctive perceptions of distance and direction by the newly hatched chick are, "in the present state of our acquaintance with the laws of mind, wholly incredible." We now know that the chick has not the least respect for those laws of mind; and we have already in these columns (*NATURE*, vol. vii. p. 300) argued that we have no sufficiently accurate acquaintance with the alleged acquisitions of infancy to justify the doctrine that they are different in kind from the unfolding of the inherited instincts of the chicken. To what we then said Dr. Carpenter has replied on one point in his "Mental Physiology" (p. 179). While admitting that human beings require no education to enable them "to recognise the direction of any luminous object," he

maintains "that the acquirement of the power of visually guiding the muscular movements is *experiential* in the case of the human infant." In support of this somewhat inconsistent position, he gives facts within his own knowledge which we do not feel to be in the least inimical to the doctrine against which they are arrayed. Mr. Sully is more consistent; he thinks it proveable that the eye has no instinctive knowledge of either the distance or the direction of a visual object. He relies greatly on "Recent German Experiments with Sensation" (the subject of his third essay), which, like Dr. Carpenter's facts, appear to us in perfect harmony with the theory they are supposed to disprove. Without doubt, there is no higher scientific authority than Helmholtz, and just for this reason is it specially instructive to observe how readily even he accepts as statements of fact what never could have been more than the suggestions of theory. In the last of his admirable course of lectures on "The Recent Progress of the Theory of Vision," he says: "The young chicken very soon pecks at grains of corn, but it pecked while it was still in the shell, and when it hears the hen peck, it pecks again, at first seemingly at random. Then, when it has by chance hit upon a grain, it may, no doubt, learn to notice the field of vision which is at the moment presented to it." In this list of assertions, even the one that might seem most certainly true is a mistake. The chicken does not peck while still in the shell; though that it does so is, we believe, the universal opinion, the actual mode of self-delivery having never been observed. The movement is just the reverse of pecking. Instead of striking forward and downward (a movement impossible on the part of a bird packed in a shell with its head under its wing), it breaks its way out by vigorously jerking its head upward and backward, while it turns round within the shell. With the advance of knowledge, theories will have, though it may be reluctantly, to accommodate themselves to facts; and after the din of the battle is over, it will be found that the real facts had never had any difference among themselves.

Mr. Sully differs from Mr. Spencer as to the relation of the evolution hypothesis to the question of realism and idealism. He is aware that Mr. Spencer "distinctly affirms that the reality of an independent unknowable force is necessarily involved in his theory of evolutionary progress. But this," Mr. Sully observes, "can only mean that every distinct conception of subject and object involves this postulate; and this assumption can hardly fail to strike one as a *petitio principii*, inasmuch as able thinkers have undertaken to find the deepest significance of this antithesis in purely phenomenal distinctions." Perhaps Mr. Spencer might be able to produce instances in which the facts of the universe have turned out not exactly what able thinkers had undertaken to find them. Considerable strain is put by Mr. Sully on Mr. Mill's formidable definition of matter—that it is "a permanent possibility of sensation;" but we greatly fear that when brought to close quarters the idealist that puts his trust in this verbal monstrosity will find himself left in the lurch. Somehow through "processes of repeated experience and sharpened intellectual action, the mind comes," we are told, "to conceive a possible impression as the originating cause of a present one, and so to arrive at that vast stream of objective events which flows on beyond,